Geophysical Research Abstracts
Vol. 21, EGU2019-3958, 2019
EGU General Assembly 2019

Minimum-variance field decomposition method for BepiColombo: dipolar field case

Yasuhito Narita

Space Research Institute, Austrian Academy of Sciences, Graz, Austria (yasuhito.narita@oeaw.ac.at)

One of the goals of the BepiColombo mission is to extenively study the magnetic field environment of Mercury. The challenge is to identify the magnetic field components of different origins, in particular, between the internal and external fields, because the conventional multi-pole expansion method using the orthogonal functions does not assume the existence of an external field to the planet. BepiColombo is unique in that the magnetic field is measured using two spacecraft. A new method is currently being developed to decompose the measured magnetic field into the internal and external components with the help of the minimum variance projection. It is found that even two-point measurements are capable of properly decomposing the measured field into a dipolar component and an external magnetopause-field component, provided that the sufficient amount of realizations or data are used for the ensemble averaging. Status of the algorithm development is reported with a limit and an application.